Unsettling Play: Perceptions of Agonistic Games

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In this paper, we propose Agonistic Games (AGs) as a serious games subcategory that can stimulate critical reflection on topics of dark heritage through multiperspectivity and unsettling play. We first discuss the emerging topic of agonism in memory studies, and then how games can be used to support its objectives. We then discuss the development of 2 original AGs: Endless Blitz and Umschlagplatz '43. We explore whether these two AGs were perceived as capable of stimulating critical reflection by collecting data from visitors to the exhibition 'Krieg. Macht. Sinn' at the Ruhr Museum in Germany where the games were installed, and from participants in an online course describing the games. From analysing data collected, we outline four factors inhibiting the capacity of AGs to stimulate critical reflection (topic, context, design, and assumptions about games) and propose strategies for overcoming these inhibitors. Our findings are valuable to scholars, game researchers, and designers, strengthening the foundations for the design and development of future AGs.

CCS Concepts: • **Human-centered computing** → **Interaction design**; • **Applied computing** → *Media arts.*

Additional Key Words and Phrases: agonistic games, serious games, agonism, museum games, critical reflection, multiperspectivity, dark heritage, memory studies

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1 INTRODUCTION

Human beings have always played games [36] yet "digital technologies have given games a new relevance" [67]. Evolving from simple blips and paddles to complex interactive systems, contemporary video games represent much more than a way to pass the time. Beyond entertainment, games are used for serious purposes (a.k.a. serious games) such as teaching [48] and influencing real-world change [58]. Indeed, games are becoming recognised, in academia and some areas of the games community, as a legitimate means of changing attitudes, promoting social reflection [64], changing how we respond to stress and pain [46], and interrogating topics of importance to society at large [63].

Hence, serious games are a buoyant field of research in their own right [12, 43], with researchers, designers and developers charged to generate and evaluate games that, amongst other aims, strive to evoke empathy in players and promote critical reflection [20, 30]. The utility of serious games is, however, still unclear and most of the evaluation efforts are focused on knowledge acquisition, which is a limited use of games given their potential to increase awareness and affect behaviour [4, 7]. The mixed results of deployments [11, 34, 61] raise questions of how serious games achieve the objectives for which they were designed–such as social awareness, critical

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reflection and positive behavioural change–and how positively they are received within the contexts for which they are intended. Furthermore, games may be perceived as a 'trivialization' of a subject, or even as having a negative impact on players, especially when they include references to conflict [2]. Such perceptions may result in a tendency to avoid games as mechanisms for critical reflection.

In this paper, we report the design and development of 2 original games that engage with unsettling events associated with World War Two, i.e. with *dark heritage*. Our core intention in offering these games is to prompt critical reflection on such unsettling topics by drawing on the theory of agonism: a concept originating from Memory Studies literature. Agonism is a new mode of remembering the past that does not focus on heroes *vs* villains (antagonism) or the plight of the victim (cosmopolitanism), but rather the motivations and experience of all social agents without apparent bias [13]. To the best of our knowledge, this is the first time that agonism has been applied to games development. Hence, it is unclear how well 'agonistic games' may stimulate critical reflection, or how they will be received by players when they handle complex and emotive topics such as the Holocaust. Therefore, we ask the following research question and sub-questions:

- RQ 1: Are agonistic games (AGs) capable of stimulating critical reflection on unsettling historical events?
- RQ 1.1: What factors may inhibit critical reflection in AGs?
- RQ 1.2: How can we overcome factors that inhibit critical reflection in AGs?

First, we present an overview of how games deal with dark heritage (Section 2). We then outline the concept of agonism, and its value as a means of exposing audiences to historical perspectives that may be uncomfortable or unsettling, such as those covered by dark heritage (Section 3). We discuss AGs as a way to promote critical reflection on sensitive topics by presenting multiple perspectives and unsettling choices within a resonating context (Section 4), leading to a description of two original AGs: Endless Blitz (Section 4.1) and Umschlagplatz '43 (Section 4.2). Both games were developed as part of the Horizon 2020 project UNREST and were exhibited at the Ruhr Museum as part of the 'Krieg. Macht. Sinn' exhibition on war and violence in European memory (Nov 2018 - June 2019). We describe the data collection methodology deployed to answer our research question (Section 5) and present our results (Section 6). Results are discussed with respect to how the games were perceived by the public and the extent to which they could stimulate critical reflection (Section 7). We conclude by listing key barriers to critical reflection identified in our evaluation and suggest ways to mitigate such issues.

2 DARK HERITAGE AND GAMES

Dark heritage–a term derived from dark tourism–refers to a type of cultural heritage site associated with bloody conflicts, atrocities, tragedy, human suffering, and sites of barbarism and genocide [28, 41]. Sites of dark heritage such as Auschwitz are becoming increasingly popular as tourist 'attractions'. While it was once believed that this popularity was due to people's fascination with the macabre, today we know that sites of dark heritage are visited for a variety of reasons [45]. For example, there may be a general desire to identify with the victims of atrocity, or a more personal interest such as to remember family history or honour ancestors. Other reasons to visit such sites include historical curiosity, to understand and 'connect with' the past, or to visit a key location for national identity, e.g. a 'must see' location.

Rising interest in dark heritage has informed both academic research [62] and popular entertainment. However, for many years there existed an assumption that printed books were the only medium that could effectively share reality, including the horrors of the past [55]. Steven Spielberg's Schindler's List, for example, was strongly criticised for what was perceived as a 'trivialization' of the Holocaust, with prejudice towards film as a less authoritative medium than the written word [15]. This attitude has been changing, albeit slowly, with film now regarded as a viable means of expressing cultural memory; even when the histories in focus are as emotionally charged as the Holocaust [15]. This is still, however, not the case with another form of entertainment that is often considered too trivial to expose historical topics in a sensitive manner: games.

On one hand, games could be a strong tool in the construction of cultural memory, partly due to their high popularity and accessibility [14, 60]. Games are also able to position players as active actors *within* a historical scenario who are empowered through opportunities to make meaningful interactions and decisions [60]. Further, the non-linear nature of games can facilitate the representation of multiple perspectives; arguably more easily and convincingly than linear media such as novels or film [60].

On the other hand, games are still seen as limited in their ability to handle serious themes, with examples running the risk of "generating controversy by being perceived as tasteless" [51]. There are several reasons for this. One is that the gaming industry lacks strong figures like Lanzmann, Spielberg or Tarantino who have the profile to push moral and social boundaries. Additionally, once serious thematic elements such as the Holocaust are placed into a game, they run the risk of being treated as simply another 'game piece' [51]. Placing a topic into a ludic frame may be perceived as mistreating cultural memory or treating it with less respect that it deserves [14]. As a consequence, historical topics that evoke strong emotive reactions are usually avoided in games [40]. The Holocaust in particular appears to be a taboo topic [16]. As Chapman describes, "though WWII is a frequent theme for videogames, the Holocaust is never mentioned or included unless couched in extremely strong negotiating frames" [14]. This is because, according to Kansteiner:

> "some of the key institutional players of the Holocaust memory establishment cannot imagine how they could successfully transfer their didactic and political mission into simulative and interactive ludic digital environments and have therefore concluded that video games and their brand of genocide/human rights education are simply incompatible with each other" [40].

In general, it is often believed that games cannot possibly communicate sensitive and contested memory in a sensible manner. Similarly, WWI games often avoid trenches, which are strongly tied in cultural memory with the pain and suffering of the soldiers:

> "WWI games that attempt to engage popular memory run the risk of being perceived as allowing players to occupy inappropriate or unsettling playable positions and re-enact historical episodes of exploitation, cruelty and abuse through their in-game actions" [14].

Indeed, the game Battlefield 1–a first-person shooter set in WWI–attracted considerable criticism for its representation of soldiers in the trenches. In contrast, games such as Call of Duty: World War II which limit references to the Holocaust to a short mention tend to attract less scrutiny.

An alternative solution is proposed by the game Czechoslovakia 38-89: Assassination (C38). This is a single player game set in the Nazi-occupied Czech Territories following the assassination of Reinhard Heydrich. Rather than avoiding an unsettling topic, C38 is built using authentic memories of World War II, shared through eight characters who represent different, and sometimes contradictory, perspectives. While these characters were not real, they were based on historical research. The game was positioned as an educational tool for schools and was in general well received, with reviews praising its historical theme and the multiple perspectives: "It excels in realistic depiction of small choices and compromises that could have had devastating consequences" [60]. This positive reception may also be due to the fact that C38 was designed much like a documentary, which is a well established medium for discussing contested histories. The game, however, did attract some criticism, including suggestions that player decisions were limited [60].

Another solution is offered by Spec Ops: The Line (Spec Ops). This is a third-person shooter video game where the player is positioned as the captain of an elite American Delta Force team sent into a post-catastrophe Dubai on a reconnaissance mission. Players' moral judgement is challenged by putting them in the midst of situations where unthinkable choices that affect human life must be made. In contrast to C38, however, Spec Ops avoids reference to any specific historical event. By using a fictional setting together with an unexpected change in narrative, the game succeeds in creating a sense of gratification through uncomfortable yet meaningful experiences [37]. Furthermore, any negative consequences of player choices are made clear through narrative

feedback methods such as cut scenes. Hence, players are made well aware of the results of their actions and their impact on the game world. The resulting sense of discomfort that players experience successfully triggers moral reasoning, demonstrating the potential of Spec Ops to stimulate critical reflection.

In the following sections we explore the design and perception of two games that place players into unsettling and uncomfortable experiences, much like Spec Ops, while maintaining an historical context rather than a fictional one like C38. Before delving into the details of our games, we introduce their basis: cultural memory theory, in particular an emergent memory approach known as agonism.

3 AGONISTIC MEMORY

Memory studies is an interdisciplinary field that supports reflection on the past in order to make sense of the present [25, 66]. In a European context, memory studies provide a means of understanding the current EU political climate by examining collective memory of the acts of war and violence that to a significant extent defined Europe in the 20th century [13]. To date, collective memory has been shaped largely by two dominant regimes: the antagonist and the cosmopolitan [25, 44]. Antagonistic memory relates to group identity, and as such aligns often with nationalist thinking of 'us' as good and 'them' as evil. It is typically characterised by a loaded recounting of historical events and a tendency to express perspectives in a highly emotive way [10]. Cosmopolitan memory in contrast emphasises democratic principles and human rights while allocating division between good and evil to democratic and totalitarian ideologies respectively. The cosmopolitan view emphasises the plight of the victim, and attempts to defuse nationalistic discourse through qualities of self-reflexivity and rational deliberation [10].

Both antagonistic and cosmopolitan modes of remembering have, however, come under scrutiny as ill equipped to consolidate contrasting perspectives on the causes and consequences of violent conflict. Where antagonistic memory reinforces a dichotomy of 'us' versus 'them' in the service of reinforcing national identity–a perspective that has catalysed the rise of the populist right wing–the cosmopolitan view is arguably overly de-politicised to the point that it ignores fundamental differences in political and social interests [52]. In response, a third type of memory, agonistic memory has been proposed as a means of addressing a lack of interaction between antagonistic and cosmopolitan modes [53]. This emergent strategy attempts to promote social cohesion by re-politicising collective memory while avoiding alienation of political opponents:

> "Agonistic remembrance does not make a primary distinction between good and bad, but seeks to contextualise socially and historically, after a comprehensive study of the past; that is, it seeks to understand, and to understand the perpetrator of violence. It is radical in its embracing of multiple perspective. It does not exclude or marginalise. Its dialogue has an open structure, one that does not necessarily aim for consensus" [5].

An agonistic mode of remembering takes a multi-perspective approach, relying on the testimonials not only of victims to understand acts of violence and oppression (as in the cosmopolitan view) but also perpetrators, witnesses and bystanders. In this way, historical context is derived by attempting to understand the motivations of actors on all sides, thus avoiding the moral categories of 'good' and 'evil' that underpin both antagonistic and cosmopolitan modes of remembrance [10]. The complexities of historical context are as a result exposed; challenging both the constructed nature of antagonistic memory and the perhaps equally problematic striving for accord that defines the cosmopolitan view. In cultural products such as museum exhibitions, this multiperspectivity is usually combined with unsettling counter-narratives to provoke a mode of critical reflection that draws on all standpoints, no matter how disagreeable any particular one may at first seem [13, 20]. Such narratives are paradigmatically open-ended, allowing museums to compare conflicting positions and providing opportunities for visitors to draw their own conclusions [54].

4 AGONISTIC GAMES

How might games be a useful means to engage with the core principles of agonistic memory, and so promote critical reflection on topics of dark heritage? At its core, the agonistic mode of remembrance promotes consideration of and deliberation on events from multiple competing perspectives, some of which are often uncomfortable and unsettling. One may detect agonism within games where players assume a persona and undertake actions that may evoke feelings of guilt or would be deemed questionable if framed in a real-world context. They may be asked to dominate worlds or to commit nefarious acts to achieve game objectives. They may in contrast be tasked to save the world, to assist others in doing so, or simply to survive. If such actions were modelled on historical figures and factual events, games could serve as a way of placing people in the shoes of real-world victims, perpetrators and bystanders. They could experience first hand the motivations that drive such people and view a scenario from a broad range of perspectives. This is agonistic.

In our previous research, we derived a set of tenets for incorporating agonism in games [20]. The collective aim of these tenets is to establish a gaming scenario that encourages players critically to reflect on topics of dark heritage. The first tenet asserts that games should provide unsettling choices for the player in order to stimulate critical reflection (**T1**). These choices may be operationalised implicitly or explicitly. For example, an explicit choice may be embedded in the narrative: at some point in the game, players must choose to take a resource or not, or to betray a non-player character (NPC) or not. An implicit choice may be integrated into the game's mechanic: in god simulators such as Black and White [49], players may distribute a limited amount of resources amongst a set of competing NPCs. They may choose to attack enemy villages to impress devout worshippers and grow their follower base, or perform miracles to conjure wood for a fire or food for their worshippers to eat. In the context of agonism, explicit and implicit choices may be designed to promote multiple perspectives on the topic. Taking our resource management example, consider putting the player in the role of a commander who must decide where to send particular troops and the size of cohorts. Sending too many to one location may leave others at risk of attack: equally, if the battle is too dangerous then many fighters will be lost. The game may emphasize the stories behind the fighters, re-humanizing them from their assigned roles in combat, to promote reflection on the consequences of the commander's decision.

This brings us to the second tenet of AGs: encouraging engagement with multiple perspectives for a given scenario (**T2**). Games have traditionally been designed to follow the hero narrative: players assume the role of the hero sent in to defeat the evil tyrant or rescue the princess [24]. However, some games experiment with placing players in different roles where the 'hero' has particular character flaws, or is not all they seem at first glance. For example, the game series Luigi's Mansion places players in the shoes of the famous Nintendo mascot's brother [18]. Luigi is in many aspects the opposite of Mario: he is frightened, and at first incapacitated and reluctant to assume the role of a hero. Another example is the game Devil May Cry in which players assume the role of Dante, the son of the god Sparta [39]. Dante is not exactly a 'good' character: he cares little for the fate of humanity and is drawn into battle with the dark lord Mundus not to save the world but driven by vengeance, believing him responsible for the death of his family. By playing the game as a demon slaying demon, players engage with the perspective of a bad character doing good things irrespective of good intentions or, in this case, lack thereof.

Games may also be designed such that players swap roles after a period of time, or indeed pose as different roles, promoting multiple perspectives through gameplay mechanics rather than story. For example, the popular deception based board game Avalon pits two teams of protagonists and antagonists against each other [1]. The antagonists are all aware of each other's allegiance, but the protagonists do not know who else is on their team.

The deceptive theme of the game lies in the quest mechanic. Players chosen by the 'quest master' each play either a 'success' or 'failure' card, placing it face down on the table. The placed cards are then shuffled. Protagonists *must* always choose the 'success' card. Antagonists can choose a 'success' card, which gives a point to the protagonists, or a 'failure' card, which earns the antagonist a point. If the latter is chosen, while the

antagonist remains hidden, every player now knows that a traitor existed in that quest's team, casting doubt among the players and on the 'quest master' who chose the team.

An expansion to the game maintains this core mechanic and adds two characters who exchange their affiliation during the game. One begins as a protagonist and the other as an antagonist, but a random draw of a card may force them to change their allegiance. Thus, players who initially take the perspective of heroes may end up on the side of villains, and must therefore change their strategy to win the game. This mechanic can be applied when designing AGs to provoke a multiperspective view on the game's narrative.

The final tenet specifies a resonating context (**T3**). A resonating context can be achieved in two ways: by ensuring either (1) that the game's subject matter is relatable to its target audience or (2) that the game's subject matter is connected to the geographical location in which the game is installed and played. For example, the game Father and Son places the player in the shoes of a man who never knew his father, an archaeologist at the National Archaeological Museum of Naples. What starts as a personal story becomes universal as the main character unveils not only his father's history but also connections between different historical eras. The game is also location based: players must visit the Museo Archeologico Nazionale di Napoli to unlock extra content, thus bridging the game's world with the physical space of the museum. In the following subsections we introduce two agonistic games we developed to stimulate critical reflection about war and conflict. Both games were installed in the exhibition 'Krieg. Macht. Sinn.' at the Ruhr Museum in Essen, Germany, and available for the public to play from November 2018 to June 2019.

4.1 Endless Blitz

Endless Blitz (hereafter EB) is a two player game where players face off and compete against one another given complementary goals. One player is a pilot flying over a city with the objective of destroying as many targets as possible, maximizing casualties as they drop a payload of bombs from their aircraft. The other player assumes the role of an evacuation officer in the city tasked with rescuing as many civilians as possible from the bombing by sending people to shelters. By playing both sides, players can experience two opposite perspectives in the same scenario (**T2**).

Furthermore, each player needs to make unsettling decisions in a short time (**T1**). With a limited payload, the bomber must predict where the rescuing player will send civilians and thus strategically destroy targets which they think contain the most civilians. Equally, the evacuation officer must try to outwit the bomber by hiding civilians in low value targets. However, each target may protect only a limited number of civilians and any civilians who are not accounted for are lost at the end of the game. This is happening very fast as the bomber moves forward across the city at a fixed speed and may not reverse its course.

While EB is set in a generic city, the game was inspired by a five-month campaign by the allied forces to bomb the Ruhr area of Germany during the second world war. The bombing of the Ruhr is still very much alive in the memories of the residents of the area, so the game's subject remains relevant to the local visitors (**T3**).

4.1.1 Game design. EB is designed to be played on a single large touch screen surface. Both players face off against each other, with the touch screen divided in half by a panel, so that each player cannot see what the other is doing. On the bomber side of the screen, the player sees an aerial view of a city. They pass over a set of target buildings modelled after known targets of the original Ruhr area bombing and must select their target and which bomb to use to destroy it, as shown in Figure 1. The plane's payload consists of a limited stock of bombs, each with different destructive power, so players must consider not just which building to destroy but which bomb to use. To the player's right is a column panel user interface showing the bombs available (the inventory), with used bombs semi-transparent to provide feedback after launching the bomb. In the centre of the view is a cross-hair sight indicating where a bomb would fall if it were dropped. In the centre bottom is a button to drop the currently

selected payload. Players can touch the panel to select their next bomb, then touch the centre-bottom button to drop the payload where the crosshairs indicate.

The evacuation officer plays using the view on the other side of the screen, as shown in Figure 1. On their left is a column panel representing civilians yet to be evacuated. At the top of their screen is a horizontal panel showing the remaining buildings not yet destroyed by the bomber and any civilians currently housed there. The evacuation officer must select a building from the top panel which then changes the current selection in the centre of the screen. Touching this building starts an animation where the civilian is sent to take shelter in the building. The user interface is updated in real time: when the bomber destroys a building, any civilians taking refuge there are killed, and the image representing the building in the top panel changes to reflect the now destroyed building. Figure 1 shows an example where the church has been destroyed (Zerstört).

4.1.2 Game development. EB was developed using the Unity 3D game engine, a game development environment that offers tools and techniques for implementing staple game aspects such as graphics rendering and game loop functionality, while allowing for high-level customization through C# scripting. EB took around 6 months to develop including background research, prototyping and implementation, with a core team of 6 people: 2 historians, 2 programmers, a 3D modeller and a 2D artist. We took an iterative approach to game design, involving many cycles of paper prototype based sprints to establish the game's look and feel as well as its gameplay mechanics. Each cycle consisted of 2 to 3 workshop sessions where each team member proposed 1 to 2 designs, maximizing the ideation phase before applying a filtering process involving playtesting with the paper prototype to understand how the game would evolve as players played it. All members of the team participated in playtests. Throughout the game design phase, we had frequent input from various stakeholders: we met with fellow researchers on the UNREST project to demonstrate prototypes and discuss the agonistic aspects of the game. We

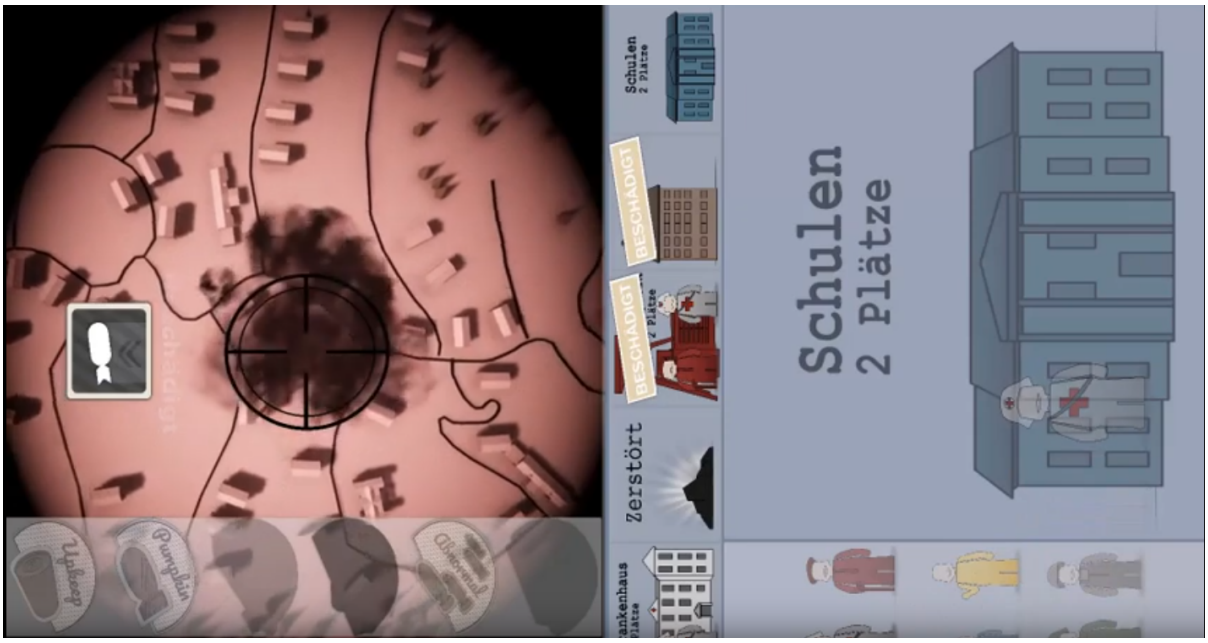

Fig. 1. A screenshot of the in-game UI for Endless Blitz. The shot shows the bomber's and the evacuation officer's perspectives. The screen is split in half where the physical divider is positioned.

also liaised with the Ruhr Museum staff and exhibition curator to ensure the games were historically accurate and to plan the installation of the games in the exhibition space.

4.2 Umschlagplatz '43

Umschlagplatz '43 (hereafter UM43) is a narrative-driven agonistic game for up to four players. UM43 was intended to contrast with the impersonal, procedural approach of EB by encouraging reflection on World War II personal stories and events from multiple perspectives.

UM43 presents a fictionalised scenario based on the humanitarian efforts of Marek Edelman, a Polish political activist responsible for smuggling Jewish deportees out of Warsaw's Umschlagplatz, a holding area near the railway station used to transport individuals from ghettos to Nazi death camps. Edelman would visit the Umschlagplatz each day with the aim of extracting supporters of the Warsaw Ghetto Uprising, often making difficult decisions on whom to save. Indeed in one of only a handful of interviews, Edelman reflects on the reality of the selection process:

> "I was merciless. One woman begged me to pull out her 14-year-old daughter, but I was only able to take one more person, and I took Zosia, who was our best courier" [42].

UM43 positions Edelman as a non-player character, tasked to evacuate one individual of several gathered at the Umschlagplatz. Players assume the role of one of four characters awaiting deportation. Players know of Edelman's role, and their mission is to convince him that they should be the one to be saved. In rounds they select and exchange narrative fragments that expose their chosen character's past, their relationship with the war, and critically why they should be saved because of how they could benefit the resistance. In this way, players experience different perspectives depending on the character they choose to play (**T2**). To establish accuracy and multiperspectivity of contexts and narratives, we conducted oral history interviews with German and Polish natives with personal or family connections to World War II, the Wehrmacht and the Resistance. Interviewees were keen to share their stories, partly to preserve the memory of loved ones but also to recognise the role of historical insight in addressing the rise of national populism across their respective countries in recent years. Multiple accounts were compared, distilled and anonymised to construct four archetypal character profiles for use in UM43, with each in some way exposing the problematic nature of delineating individuals into categories of 'victims' or 'perpetrators' (See Table 1). With respect to **T1**, UM43 aims to evoke tension in the way that players must confront cognitive dissonance: they are at once likely empathetic to a deportee's predicament and compelled to consider deception or defamation as a means of saving themselves. Indeed to win the game, players must ultimately accept their character's individual flaws or crimes while explicitly condemning another human being in need. Whereas the act of one (imperfect) individual condemning another might evoke a charged emotional response in the antagonist view, the agonistic perspective strives to encourage a more balanced review of the sociopolitical context that drives such actions. Ultimately, UM43 attempts to promote critical reflection on the motivations behind making unsettling decisions. In the context of the Holocaust, we expected such decisions would have the potential to be deeply unsettling, especially considering the game was installed in a German museum visited mostly by German citizens who have a long history confronting Nazism's crimes such as the Holocaust (**T1**). This potential was further increased in that UM43 was designed first and foremost to be experienced at 'Krieg. Macht. Sinn', an exhibition that was itself trying to stimulate critical reflection on conflict and an environment where we would expect players to be somewhat mindful of the interaction between history and agonistic modes of remembrance.

4.2.1 Game design. The game consists of 5 screens: a central screen showing a top view of the Umschlagplatz surrounded by 4 touch screens. Each of these touch screens is dedicated to a character. The screen shows an image of the character with a brief description and is complemented with a physical ID card. Each ID card consists of an A4 page presenting an image of the character, basic demographic information (e.g. age, gender,

Table 1. Umschlagplatz '43 character profiles and their historical inspirations.

Character	Profile	Historical Inspiration
	As a teenager, Philip was an ardent patriot and ONR (National Radical Camp) advocate. Encouraged by his university tutors' speeches, he became an ONR member, supporting the Ghetto Benches and Jewish segregation in Polish universities. Despite joining the fight at the start of the war, he quickly ended up earning a living blackmailing people who were helping Jews and selling them out to Nazis.	Philip is inspired by the numerous Italian families who moved to Poland in the early 19th Century during and following Napoleon's conquests in Eastern Europe. Generations of these families fought in World War One and Two. These families tended to display nationalistic tendencies, joining groups such as the ONP.
	A member of the Jüdischer Ordnungsdienst. David's wife is terribly ill, so to earn the money to get her vital medicine he took the difficult decision to collaborate with the Nazis and keep order in the Warsaw Ghetto. He remains openly Jewish and, despite his position, tries to help those in need.	The Jüdischer Ordnungsdienst or Jewish Ghetto Police collaborated with Nazi officers to guard ghetto gates, deter smugglers and round up prisoners for deportation to death camps. Considered by some as tools of the Holocaust or as themselves victims, the Jewish Ghetto Police demonstrate the complexities of life under the Nazi regime.
	Born in 1918 into a Jewish family, Maria was trained as a nurse. Married to a Jewish shop owner, she had a daughter, Lydia, in 1933. In 1940 the whole family along with their parents and cousins were sent to the Ghetto. Using her position and access to medical supplies, she poisoned the eldest members of her family before leaving the Ghetto in fear that they would face a far worse fate in the camps.	Maria is inspired by the true story of a World War II nurse who killed her parents so they could die peacefully rather than suffer at the hands of their Nazi occupiers. A separate story was of a woman who begged for her child to be saved at the Umschlagplatz at the cost of her own life.
	Klaudia was forced to hide her homosexual relationship to keep both parties safe, however, someone began blackmailing her partner. Klaudia decided to pay the blackmailer, yet they continued to demand more money to keep the secret. Klaudia had no choice but to fight back. Deciding to eliminate the danger, she came across a Jewish nurse who will prepare 'specially dosed medication' to order.	Klaudia exposes how homosexual people (both female and male) were mistreated during World War II. At the same time, she is an example of the many strong women who resisted aggressors through civil action, sabotage or people smuggling. Klaudia is the only person in UM43 who was not afraid to confront the Nazis directly.

job occupation), a short biography, and the historical research that informed the character. Players could read the information provided by the screen and the ID card to get a sense of the character and decide which one to play as. Players start the game by clicking the next arrow button on their screen. By placing the characters' screens around a central screen, we ensured that players would be facing one another as they might have done in conversation at the Umschlagplatz. In each turn, players have to choose from three different statements that are shown on their screen. The player can decide to commit to a statement that is either true or deceiving (i.e. that obscures potentially incriminating personal information), or alternatively at certain points can elect to defame other characters to improve their own profile within the group. Each statement is assigned a 'personal value' and 'trustworthiness' score that may be positive or negative depending on the nature of the facts, lies or 'dirt' communicated (See Figure 2). For example, while Philip's disclosure that he has exchanged information with the Nazis reduces his trustworthiness, the promise of divulging details of Axis plans to Marek increases his personal value. Given that the game makes explicit to players how scores are affected by their selections, UM43 could be criticised initially as lacking a sense of jeopardy. This is, however, mitigated by applying a heavy points modifier to a particularly unsettling decision towards the end of the game, where players are asked by Marek to choose who should not be saved. A character's cumulative score would likely be compromised should their story be judged by others as contradictory or suspicious.

4.2.2 Game development. UM43 was developed using web technologies; HTML and CSS handle the structure and styling of content while JavaScript enables player interaction and holds scoring data. The JSON file format is used to store statements, enabling speedy updates to the narrative content of the game as required. UM43 was developed over the same period as EB and involved similar activities of paper prototyping and UNREST

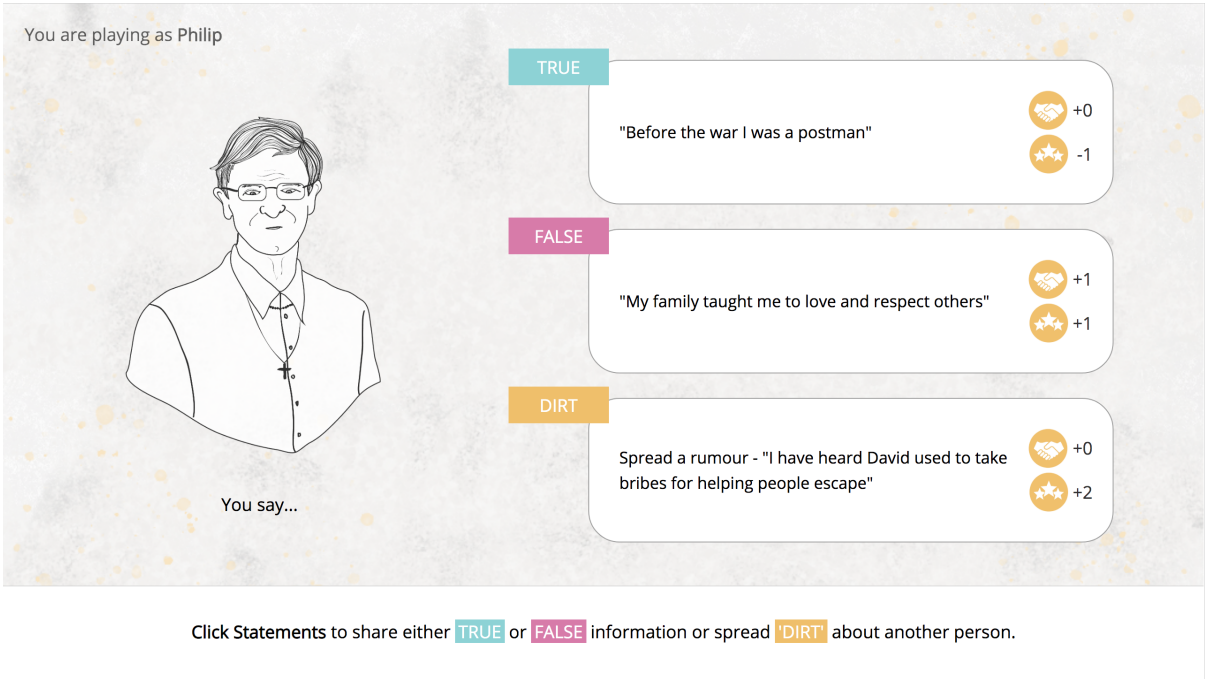

Fig. 2. A screenshot of UM43 gameplay. Here the player is asked to exchange a truth, a lie or a rumour with another player.

stakeholder review to shape the version deployed at the Ruhr Museum. The game was translated into German for use in the 'Krieg. Macht. Sinn' exhibition, a process that required careful attention to ensure that the tone of the initial English setting was preserved.

5 METHODOLOGY

We used a combination of methods (Figure 3) to explore whether AGs were perceived as capable of stimulating critical reflection on historical events (RQ1). We collected data from visitors to the exhibition at the Ruhr Museum where the games were installed, and from participants in an online course describing the games.

5.1 Exhibition at the Ruhr Museum

We collected data from visitors to the exhibition 'Krieg. Macht. Sinn' using a combination of direct observation and interviews. Direct observation has been successfully used to record museum visitors' behaviour, their movement through rooms, their attention to exhibit content, and viewing time [6, 26]. It is, however, challenging to gain a rich understanding of the visitor experience just by observing them; as researchers we may make biased assumptions about their state of mind [33]. To mitigate this concern, we combined observational data with interviews to provide a range of data on visitor attitudes, experiences, and behaviours [3].

5.1.1 Participants and sampling. Participants were randomly selected from adults visiting the exhibition during its opening week (Monday to Sunday). Since we were interested in understanding factors that may inhibit AGs from facilitating critical reflection, we first looked to identify barriers to play (since not playing the game would necessarily preclude its stimulating critical reflection). We therefore included both visitors who did and did not play the EB and UM43 games. 31 visitors were selected at random and observed by a researcher, with 24 of them seen to engage with the games to some degree. A second researcher asked a random sample of visitors whether they were available for an interview, with 18 visitors accepting (3 females and 15 males aged 19-73). 6 of these 18 interviewees had played EB and none had played UM43.

5.1.2 Direct observation. Since people may behave differently if they are aware they are being observed, we used an unobtrusive method to record our observations, meaning visitors did not know they were being observed [6]. A researcher was present in the gallery and used a paper form to note visitors' level of engagement. We carried out direct observation to collect data about visitors' behaviour towards the games, including whether the games caught visitors' attention and whether they were played or not. Based on Bitgood's stages of attention of museum visitors to an exhibition [6], for each game we labelled visitor engagement in 1 of 3 ways: (1) 'Play' (i.e. fully engaged) if visitors undertake a complete or partial playthrough; (2) 'Interact' (i.e. focused) if visitors were touching game screens or inspecting supporting materials (e.g. ID cards for UM43) yet made no apparent attempt to undertake a playthrough; (3) 'Stop' (i.e. captured) if visitors were stopping to watch other players or to observe the games' screensavers which consisted of short loops of content. In this way, we could gauge the number of visitors who interacted with the AGs and how. All the data collected from direct observation were transcribed and organised into a spreadsheet where we recorded the visitor ID, the type of engagement, actions such as reading labels or chatting with another visitor, and how many times the game was played.

5.1.3 Interviews. The interviews were semi-structured. While we had a set of questions, we allowed visitors to bring up new ideas and topics. We wished to interview both visitors who played and did not play the games as we were also interested in identifying the key barriers to play. Hence, we usually started by asking whether they played the games or not, and why they played or did not play the games. Another line of questioning regarded the choices they made while playing the games. For instance, which characters or side they chose, and why. We also collected basic socio-demographic data (i.e. age, gender, nationality). Each interview was audio-recorded and then transcribed. Since our aim with the interviews was to collect in depth qualitative data,

we ran a thematic qualitative analysis of the transcripts. Based on guidelines for conducting thematic analysis [8], we first familiarised ourselves with the data, then coded the data, searched for and named themes. The data were coded by two researchers independently. Themes were discovered following the technique of cutting and sorting: interesting quotes were cut out and pasted into a separate document. Similar quotes were then sorted into groups. Each group was named and these labels formed the themes.

5.2 Online course (MOOC)

We collected and analysed online comments left by those undertaking the course 'Politics and the Modern World' delivered by the University of Bath. This online course (hereafter referred to as the MOOC) was created to discuss how people remember war and violence by comparing different modes of remembering. The MOOC explored how the new model of agonistic memory can help us better understand conflict, and covered case studies including the AGs we developed. While participants were not given an opportunity to play EB or UM43 (in contrast to those interviewed in the museum), they watched a video describing the two AGs and could leave their comments. We were particularly interested in analysing online comments because it has been shown to be effective in understanding individuals' perspectives on controversial topics, as people feel safer expressing their opinions in the virtual environment rather than in person [9]. This provided a complementary analysis and also allowed us to gain a better understanding of how the AGs were perceived by a larger sample of people besides visitors to 'Krieg. Macht. Sinn'.

5.2.1 Participants and sampling. Participants in the online course included educators, archaeologists, museum professionals, diplomats, academics and students from a variety of fields (e.g. technology, philosophy, intercultural studies, history). We collected a total of 114 comments referring to the AGs. We excluded from the sample any comment not related specifically to the games (e.g. discussing only the wider exhibition) or duplicates (i.e. sometimes comments were posted twice by mistake).

5.2.2 Comments analysis. We analysed the 114 comments using online content analysis, a quantitative method used to count how many times a specific concept appears within online content [29, 47]. Based on our research objectives and findings from the museum exhibition, we developed a coding book, creating a set of categories and subcategories before coding (See Table 3). Two researchers (hereafter referred to as the coders) manually coded the comments independently. First, the comments were copied into a Word file. Secondly, the coders highlighted sentences from the comments using different colours according to the categories. The coders followed the code book that listed and explained each category. In this way, we tried to ensure a systematic and replicable coding of the data. If a highlighted sentence could not be assigned to any of the provided categories, then coders could create a new category. In practice, however, this was not required. Thirdly, the highlighted sentences were added to a spreadsheet. In the spreadsheet, a label was added to each sentence to describe its meaning, and the corresponding categories and subcategories were selected. In the eventuality of discrepancies between the two coders, the code was verified by a third coder who decided which category and subcategory to assign. Lastly, the instances of each category and subcategory were counted.

6 RESULTS

In this section we report data gathered from the Ruhr Museum and the MOOC. Direct observation in the museum provided data to help us understand if and how visitors engaged with the games. Of the 31 individuals observed, 3 played EB and 2 played UM43. Engagement with the games more frequently took the form of basic exploratory interaction or cursory observation of the game kiosks (Table 2). Indeed, there were 24 distinct instances of engagement with the games: 12 with EB (by 7 females and 5 males) and 12 with UM43 (by 6 females and 6

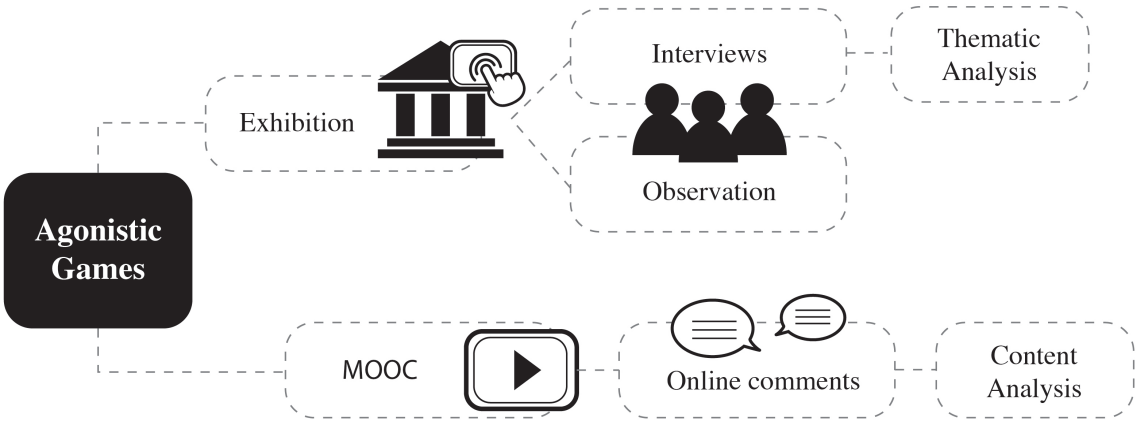

Fig. 3. Parallel timeline diagram showing our methodology in phases from game development through to content analysis.

Table 2. Number of visitors who engaged with the games (Stop, Interact, and Play)

	Stop	Interact		Play
		With screen	Screen + Info (e.g. ID cards)	
UM43	3	1	6	2
EB	8	1	0	3

males). For UM43 the printed ID cards were found to be of more interest than the game itself, while with EB the predominant mode of engagement was visual inspection.

Of the 18 museum visitors we interviewed, 6 played EB and none played UM43. These interviews provided additional insight into how both AGs were perceived by the public, including reasons for not playing the games. These motivations include for example the context of gameplay (6.2) and the game design (6.3).

The analysis of the MOOC comments provided us with insight into how the AGs were perceived by scholars, museum professionals and politicians. Some comments contained multiple sentences and/or paragraphs. Within these comments we collected, 58 sentences were rated as positive towards the games, 29 as unsure, 38 as negative. 30 were suggestions and 19 were examples of other games (See Table 3). In particular, the games were considered engaging (30 mentions) and educational (24 mentions). Furthermore, in some cases participants were also positive that games can stimulate critical reflection (17 mentions) and provide different perspectives (11 mentions).

However, while the AGs seemingly had the potential to cause critical reflection, data collected from direct observation and interviews suggest that only a small proportion of the museum visitors played our AGs. From the data collected, we identified four main factors influencing perception of the games: (1) the topic of a game; (2) the location in which a game is played; (3) the design of a game; and (4) people's assumptions about games.

6.1 Topic

The analysis of the MOOC comments confirmed that specific topics are very challenging for games and can inhibit play. In particular, the games were considered trivializing of complex and sensitive topics such as war and genocide (14 mentions). This was an issue especially for UM43. According to participant P.7, the game *"seems to*

reduce the deeply problematic and the very real tragedy of conflict to the imaginary world of a game" and again P34: *"My concern is that the games sanitise and trivialise warfare"* and P.38: *"by creating these games, it takes away something of the seriousness of these histories"*. P.82 had a very personal and traumatic experience of World War II and according to him, *"War is far too serious to be treated so trivially"*. According to P.113, *"important events that we have discussed during the course, may well be being trivialised by making them into games"*. P.112 agreed: *"I believe that it is totally inappropriate to have these types of games on the horrors and atrocities of war"*.

The word 'violence' was also associated with games 15 times across responses. In particular, the topic of EB was perceived as too violent, focusing mostly on the role of the bomber. Although our games were not designed with children in mind, their influence on the younger generation was still a concern for 9 participants. For example, according to P.110: *"A child playing bombing games or selecting people to live could cause emotional problems later on"*. For P.35, games *"can impact on some peoples' minds. (A lot of research has shown this.) Negatively I mean. I think young people should be interacting with life and not with computers"*. The negative influence of games is further argued by P.112 who says *"there are many children around the world who sadly are influenced by video games"* and P.72 who states *"unfortunately, a lot of children, young and old people already have played games where they watch violence"*. P.87 supports these statements by referencing a real-world event: *"right now a lot of my students play a game called Fortnite, which if I am not mistaken the New Zealand attacker cited as one of his motivations"*. Therefore, the opinion of some of our participants is that games should not focus on killing and destroying. For example, P.85 argues that *"the market is over crowded with video games that use violence as the main mechanic and purpose [...] Why [sic] video games so often take the perspective of the soldier/killer?"*.

However, in 19 cases games were believed to have a beneficial impact on younger audiences. While we could use games to engage children, participants highlighted just how important it is to talk with parents and educators *"so that the message is not lost or misinterpreted"* (P.109). 3 participants even suggested the need for psychologists to be involved in the game design phase, and potentially in analysis of the end product.

6.2 Context of gameplay

Through the interviews and the MOOC we identified that the location of the games - a public space rather than a private setting such as a home - influenced how the games were perceived in four main ways:

(1) *Focus of visitor attention.* Among the more than 200 objects on display [19], two of the interviewees did not even notice that there were games installed. The issue that the games were often overlooked was confirmed by our observations: of the 31 visitors we observed. 16 did not look at EB and 19 did not look at UM43.
(2) *Time.* Visitors typically spent little time at the exhibition (33 minutes on average) and in turn tended to focus their limited time on the historical artefacts on display. One visitor, for example, highlighted how seeing the 'real' objects is better than watching a screen.
(3) *Number of players.* Visitors who were visiting the exhibition alone perceived the games as a multiplayer experience only. For example, EB is a two player game. One visitor started interacting with EB but soon determined that he could not play alone. In contrast, UM43 could be played alone with artificially intelligent (AI) computer controlled characters but visitors did not seem to notice. While in a private setting it could be more feasible to find other players (e.g. family members, friends), it is not so easy to invite strangers to play together in a public setting.
(4) *Perception of museum games.* MOOC comments expressed low expectations about the quality of museum games in general. This may have inhibited play. P.83 summarizes that *"there are too many computer 'games' in museums which suffer from poor implementation and design which experienced gamers will avoid on sight"*.

6.3 Game design

Insights gained from the Ruhr Museum and the MOOC comments exposed three ways in which the design of the games influenced how they were perceived and whether they could stimulate critical reflection or not:

(1) *Hardware.* Two of the visitors interviewed stated that they did not interact with UM43 because the 5 screen configuration gave the impression that it would be difficult to play. In this way, the design of the hardware influenced how the game was perceived, inhibiting play and, as a result, the potential for critical reflection.
(2) *Instructions.* The gameplay of EB was found not to be intuitive. A full playthrough was needed before the mechanics and objectives of the game were understood, despite instructions being available at the kiosk. For example, players of EB did not realise immediately that they were in competition (i.e. bomber pilot *vs* evacuation officer). One person playing as the evacuation officer understood this only when some of the civilians under her care disappeared as the other player deployed a bomb.
(3) *Multiple perspectives.* Online comments were optimistic about the idea of stimulating critical reflection on topics of history by exposing multiple perspectives. For example, P.114 thought that *"the games will be a great way to encourage people, especially of the younger generation, to reflect on the severity of the events and bring them to life in a believable way"*. In this way, games *"have the potential to provide players with a perspective they haven't considered"* (P.39). According to P.25, *"if a player is likely to play both sides of the story [...] it is unlikely that they will not feel any sort of connection to each side, resulting in some understanding of each and multi-perspectivity"*. More than half of the participants (58 of 114) acknowledged that AGs may have a positive effect on players in terms of adopting different perspectives, learning more about historical events, and/or reflecting on the past.

6.4 Assumptions about games

The interviews and MOOC comments exposed two key assumptions about what a game is: (1) games are just for children; and (2) games must have a winning condition. These assumptions may not only influence the decision to play or not to play the games but also inhibit critical reflection. For example, 23 participants were unsure about the impact of AGs and were worried that the games may not be perceived as intended by adults: *"Part of the challenge is that games are regarded as purely for entertainment and aimed for children/younger audiences. Arguably they have the greatest power to unsettle us as they can put us in a perpetrators virtual shoes"* (P.69). Indeed, although the games were designed for adults, they were mostly considered as a positive activity for the younger audience (19). If games are considered a 'children only' activity, then adults may not even try them.

Another issue was that players expected to 'win' the games if they took the 'right' decisions, that is, if they followed an optimal strategy. MOOC comments provide an understanding of this issue. Three participants argued that gamers may not like our games because they do not result in a winner; a feature typically associated with games. For instance, P.57 was afraid that *"the game [EB] being never-ending - you don't win or lose - while not unattractive in a time-limited museum setting would not meet the expectations of the vast majority of gamers who want the win, the hit"*. Unsurprisingly, our AGs were compared 5 times to commercial games with clear winning conditions such as Battlefield, Call of Duty, and the Witcher. However, winning may not always be desirable in AGs as agonism advocates an open-ended narrative that provides opportunities for reflection [54]. This is particularly true of EB, which is perpetual and as such does not conclude in success or failure.

During interviews, players explained that their choices were made exclusively to win the game, to achieve objectives, without examining the context or the consequences of their actions. For example, players would choose the bombs causing higher damage or rescue medics and soldiers because the game determined that they were especially important for the war. While the action of destroying buildings in EB may have felt normal during the playthrough, during the interview one player stated that the action of destroying buildings in EB stuck in his head after playing the game, However, at the end of EB, it was not clear who won the game or if there was a winner at all.

Table 3. MOOC comment data. On the right is the number of times each category and subcategory was assigned to sentences from the comments.

Negative	38
Positive	58
Unsure	29
Suggestion	30
Example	19
Unsure about impact	23
Unsure about empathy	8
Unsure about learning	3
Unsure about ethical	8
Unsure about reflection	8
Engaging, fun	30
Not fun	15
Brutal	8
Unsettling	4
Disrespectful	11
Oversimplify	13
Educational	24
Deliver message	11
Different perspectives	11
NOT different perspectives	1
Critical thinking	17
Not critical thinking	2
Good for ***kids***	19
Dangerous for ***kids***	9
Good for ***adults***	6
Needs empathy	1
Needs challenging	2
Needs planning	3
Invovle psychologists	3
Needs more perspectives	3
Museum experience	4
Role playing game	2
Boardgame	1
News/blog	2
Videogame	12

Although the absence of a win condition was intentional by design, this caused some frustration for the more experienced gamers in particular. Other players claimed that the games did not encourage critical reflection, yet during interviews the same individuals were actually reflecting on the consequences of their actions. It seems then that the interviews themselves were beneficial in helping players to analyse their in-game choices and situate them within the agonistic context of the exhibition.

7 DISCUSSION

Based on our analyses of the data collected from the exhibition at the Ruhr Museum and the MOOC, in this section we highlight key factors that inhibit critical reflection in AGs (RQ 1.1) and discuss how these inhibitors may be overcome (RQ 1.2). We draw conclusions on the capacity of AGs to stimulate critical reflection on unsettling historical events (RQ 1).

7.1 RQ 1.1: What factors may inhibit critical reflection in AGs?

We identified four main factors influencing how games are perceived and their ability to stimulate critical reflection: (1) the topic of a game; (2) the location in which a game is played; (3) the design of a game; and (4) assumptions about games.

7.1.1 Game topic. As described in Section 2 and confirmed by our findings, games are perceived by some as inadequate at or even inappropriate for representing nuanced and sensitive topics, such as the Holocaust. Our findings show that such views extend clearly to AGs, with EB described as 'violent' and UM43 prompting strong opinions related to ideas that games trivialise warfare and reinforce undesirable behaviours. Indeed, a telling example is found during discussions of EB amongst MOOC participants in which the role of the bomber prompted stronger reactions than the evacuation officer–and was the key focus of discussion–despite the two characters having equal prominence in the game. Our AGs offered players unsettling choices (**T1**) and presented multiple perspectives (**T2**), yet these characteristics did not translate to a deeper reflection on the topic for the majority of people who encountered EB and UM43. Intead, both players and MOOC participants observing gameplay seemed to misinterpret the core message of our AGs or struggled to take them seriously as tools for critical reflection.

This situation was not entirely unanticipated, and we attempted during the development of our AGs to mitigate immediate negative responses by treating their historical context with great care. For UM43, as an example, we followed approaches found in commercial games that deal with unsettling topics such as Czechoslovakia 38-89: Assassination, and drew on a series of interviews with World War II survivors or their relatives. The incorporation of these accounts in UM43 was reviewed by curators of 'Krieg. Macht. Sinn' and experts in memory studies, leading to several iterations on how the material was handled in the game; for example, the decision to articulate the

historical inspiration for playable characters via physical ID cards that accompanied the exhibit. These measures were, however, not enough to encourage individuals to progress from reaction to reflection, and therefore it is clear that further methods of implementing the intentions of AGs, i.e. the function of gameplay to provoke critical reflection on contentious events from multiple perspectives, is needed.

7.1.2 Context of gameplay. In Section 4, we defined **T3** as a function of where the game is played, i.e. its geographical location, and how the game's subject matter is relatable to those playing it. While true, this definition is lacking other clear factors arising from our study results: namely the importance of the environment in which AGs are situated. For example, upon installing our AGs in the Ruhr Museum exhibition, it quickly became clear to us that the games truly manifest their resonating context *in situ*, i.e. within the environment established by the exhibition. The consequences for **T3** then may be that when an AG is played outside an established context, that AG may lose its resonance with players. That is, the environment surrounding the game is crucial to supporting critical reflection. As developers of EB and UM43, we engaged the curators of the Ruhr Museum frequently during the design process, not only to ensure the historical authenticity of our games but also to negotiate their placement in the exhibition. Nevertheless, the design and development of both games was treated mostly as an outsourced, and to some extent adjunct, activity. This may have influenced how the games were perceived by the public, with many visitors not even noticing the games in the context of the overall exhibition.

We also identified time as a key factor in a public environment such as a museum [27]. First, the time spent interacting with a game in a museum or public space is typically significantly less than at home, especially since visitors tend to spend less than 20 minutes in an exhibition regardless of its topic or size [59]. Based on our observations, we know the average time our visitors spent in the exhibition was 33 minutes. Considering that visitors may be interested in the various topics and objects on display, this means that they may not have much time remaining to dedicate to a game. Secondly, players in a public setting such as a museum must be considerate of the people around them: other members of the public may want to see the same display or play the same game, pressuring them not to spend much time with the game. As a consequence, interactive experiences in public contexts are commonly used for up to 4 minutes [35]. Accordingly, our games were designed to be played in less than 5 minutes. However, quick gameplay sessions are difficult to design as there is usually no time to complete a tutorial session, that is one or two levels to learn and practise the rules of the game. This limits the scope of the game's narrative, impacts decisions on mechanics and user interface, and ultimately requires players to negotiate a significant amount of information without much time for processing. While many games are successfully designed to be played in public spaces [50] and consider issues surrounding the time to learn mechanics, the purpose of these games is to entertain. AGs have a purpose beyond entertainment, which is to stimulate critical reflection. Hence, players not having sufficient time to engage their critical faculties after just a few minutes of gameplay may be another inhibitor to stimulating this critical reflection.

7.1.3 Game design. Both EB and UM43 deploy new game mechanics which were devised to fulfil the tenets of agonistic play [57]. As such, we did not use mechanics familiar to players, who had instead to learn a new set of rules to play the games. This aspect, together with the public's general unfamiliarity with the concept of agonism and the short-form style of the games, presented a significant challenge and affected how the games were perceived. Especially in EB, players must in a matter of moments comprehend the relationship between bomber and evacuation officer, and make decisions that respond appropriately to game rules and objectives. This may place a high cognitive load on players, potentially interfering with their capacity to derive meaning from their experiences. Indeed, high demand cognitive tasks in games more broadly may "leave no cognitive resources available for generalizations and acquisition of meaningful knowledge" [38]. Players of UM43 navigate the gameplay a little more slowly than in EB due to UM43's turn based mechanic. Their capacity successfully to comprehend the game's message may nevertheless still be hampered by the significant amount of textual

information that they are expected to process. During UM43, players are tasked to understand and act on their own character's situation while reading, analysing and committing to working memory the fragmented accounts of up to three other in game characters. Furthermore, juxtaposition of contrasting perspectives–fundamental to the aims of an AG–also requires high cognitive load as players have to identify, understand and empathise with opposing views. The fact that we took a series of high risk game design decisions made the game mechanics particularly complicated to understand, causing confusion and even at times frustration for players. Ultimately, the use of multiple perspectives and of new game mechanics based on agonistic theory entails high cognitive demand, which in turn may limit the capacity for games as complex as AGs to achieve their intended aim of promoting critical reflection–at least as a short form game in a public setting.

7.1.4 Assumptions about games. AGs are a type of serious game so their purpose extends beyond entertainment. Hence, the goals and objectives of AGs do not necessarily align with those of games in general. However, EB and UM43 were often associated by the MOOC participants with commercial warfare games such as Battlefield and Call of Duty rather than other serious games such as Czechoslovakia 38-89: Assassination. Hence, the players expected our AGs' main aim to be entertainment, with two main consequences.

First, players expected AGs to offer *realistic conflicts* like well known warfare games. This realism is often due to photorealistic art used to immerse players into conflict. For instance, players use extremely realistic weapons that can be used to hurt people. If characters in the games are hurt, players typically encounter representations of blood. Due to this realism, those games are usually considered openly violent. As a consequence, AGs were also assumed to display acts of violence. However, the games deliberately do not offer photorealism. EB's artistic style is paper-like, far from the realistic killing of traditional warfare games. UM43 on the other hand offers a minimalist art style and involves mechanics of conversation where players share information between each other, not violent acts.

The second issue raised by both the MOOC comments and the interviews was that the player's goal–rather unsurprisingly–is usually to win. Though recent years have seen a rise in interest in games without clear win states, for example walking simulators such as Firewatch [56], players still generally expect either to win or to lose a game. This preconception about games has two consequences. First, players will likely opt to select choices that will award them the most points, without necessarily reflecting on their actions. Secondly, the realisations that EB does not have a winner and that in UM43 even the most considered strategy may not necessarily enable a player to win may result in frustration.

7.2 RQ1.2: How can we overcome such inhibitors?

7.2.1 Overcoming inhibitors related to game topic. Although addressing wider preconceptions of games is beyond the scope of this paper, we suggest two ways in which we and future designers of AGs can mitigate challenges related to players' misinterpreting the core message and function of games that engage topics of dark heritage. The first is to establish a mode of pre-game briefing that serves to outline the characteristics of AGs and their intention to encourage critical reflection on unsettling historical topics. While EB and UM43 currently include an overview of the core mechanics and a short introduction to the narrative context of the games, they do not expose their agonistic underpinnings. Players unfamiliar with agonism (a relatively new mode of remembrance) may therefore find it difficult to recognise and interpret why AGs negotiate sensitive subject matter, reference acts and actors that have negative connotations, and ask players to make unsettling choices. A promising format for the pre-game briefing is a 'couch commentary'; that is, short video excerpts of gameplay accompanied by voiced descriptions and explanations of the material presented. Couch commentaries offer the benefit of being incorporated directly into an AG, thus exposing the context, function and even the core mechanics of the game before or during player interaction, depending on their design.

A second way to address negative perceptions or preconceptions of AGs, e.g. that they trivialise war, is to enhance their legitimacy by adopting a full participatory or co-design process. While survivors of World War II and their relatives were interviewed to inform the design of both EB and UM43, they were not actively involved in the game's design, development and evaluation stages. This is a limitation we will address in future AG projects to ensure that the final form of our games expresses unsettling topics in a way that echoes the reality of the events depicted; both in terms of historical information and overall tone. A co-design process would give stakeholders, e.g. survivors, perpetrators, historians and policymakers, a central role in designing AGs–from setting key aims through to testing *in situ*–and help developers shape the way in which various perspectives are framed and communicated. Through this co-design process we would not only get input to ensure the historical authenticity of the games but also gain stakeholder's approval, thus legitimising the existence of the games. For example, a collaboration with Jewish communities would be key to legitimise a game about the Holocaust. To encourage critical reflection in players, however, it is important to make them aware that such a participatory process has been undertaken. If the historical validity and legitimisation of the games is not made explicit or is unconvincing, we suspect that some individuals faced with AGs will continue to find it difficult to move past initial reactions to the topic or preconceptions that games are an unsuitable means of engaging sensitive topics. Hence, we recommend presenting AGs along with metadata and background information, for example behind-the-scenes footage of development and/or research material used to develop the game's historical context. The 'couch commentary' offers one means of revealing the input of relevant stakeholders in the design, development and evaluation of AGs, and it is likely that further effective methods of doing so will emerge as our research progresses. In this way, the games are transparent regarding their source material and how they relate to the historical context in an agonistic way.

7.2.2 Overcoming inhibitors related to the context of gameplay. Our AGs were installed in a museum; a public space. While public spaces can be successful in providing a resonating context (for example due to the geographical location or objects displayed around the games), they also present challenges. The main issue is time available to play. A private context, such as a home, would give players more time to play and potentially more time to think and reflect on the game's subject matter. Playing at home could, however, cause the loss of resonant context, especially if this context is established through the connection between the game topic and the geographical location in which it is played. A solution may be to offer a capacity to book a slot to play the game, thus encouraging individuals to dedicate an appropriate amount of time to play and to reflect critically upon the AG.

Another issue is that visitors would often not even look at the games. This could be due to the AGs' not being fully integrated into the curation of the exhibition. Museum professionals should be aware of the full potential of games to engage visitors with difficult and polarising topics. If a museum handles AGs as supplementary to their primary offer, then they are likely to allocate fewer resources and planning to their development. As a result, visitors may perceive museum games as irrelevant or may not perceive them as an integrated part of an exhibition. To overcome the challenge of encouraging this form of stakeholder input, one suggestion we make is to help museum professionals understand the benefits of serious games by including them more generally in activities of playing and making games with a purpose [22]. In this way, they would gain first hand experience of how a game can influence the behaviours of players and, further, the value of serious games when situated in cultural institutions and experiences.

7.2.3 Overcoming inhibitors related to game design. As previously discussed (Section 7.1.3), design decisions based on agonistic theory may cause high cognitive demands. Kalyuga and Plass's research [38] on managing cognitive load in games suggests ways to mitigate issues associated with high cognitive load while adhering to the agonistic tenets. They suggest several factors in game-based learning environments that contribute to extraneous cognitive load, including the rate at which new information is introduced into working memory, and the spatial or temporal distancing of related chunks of information. Drawing on this work, we suggest two ways

to overcome high cognitive load. First, designers of AGs should consider reducing the number of actors within a game scenario or rethink the sequencing in which character stories are exposed to players. For example, EB could begin with a brief animation or video to set the scene for the pilot and evacuation officer, while UM43 might reduce the total number of playable characters. Secondly, in EB and UM43 we could provide information at different stages, with the possibility of prompting instructions when needed. For instance, in EB information about the bombs available and the evacuee profiles is presented only within initial game sequences. During the game, players were then required to connect very quickly a bomb's nickname (e.g. Pumpkin) or evacuee profile (e.g. Nurse) to their value to the war effort. While a label illustrating the bombs and evacuees' values was attached to the game kiosk, players seemed either not to notice or simply to focus on the screen. As their task is on the screen, that is where their attention focuses and where they expect to find the information they need [21]. Hence, players had to recall this information later when making choices of where to bomb (when playing as the pilot) or whom to save (when playing as the evacuation officer). Without on demand access to a knowledge base about the bombs or evacuee values, players are likely to resort to 'trial and error' strategies that–although successful in some cases–are cognitively inefficient [65] and potentially detrimental to the two player gaming experience. A simple fix in this case would be to offer 'just in time' information [31] by including points values on bomb and evacuee icons within the portion of the game where players deploy such selections (see Figure 1). UM43 also describes the characters only at the beginning of the games. While printed ID cards are always available, players may not have time to go and read them during gameplay, especially given that those cards are rich in content, diving deep into each character story and historical background. Thus, on demand access to information or visual cues displayed close to the character's image on screen may be an appropriate solution for UM43 too. Finally, UM43 presents players with a difficult choice, namely that of who should be saved. The game might therefore help reduce the cognitive load found at the end of the game by instead presenting players with several less significant choices spread out over the course of the game.

7.2.4 Overcoming assumptions about games. The agonistic approach is novel and not yet established in games. Furthermore, the purpose of AGs is quite different from established commercial games as AGs do not focus only on entertainment but also aim to stimulate critical reflection. However, since players have little to no familiarity with agonism, they do not have the knowledge necessary to recognise the game's ambitions to promote reflection through multiperspectivity and unsettling decision making. The risk is that players will instead resort to linking AGs with something more familiar, such as educational games that are usually for children or commercial games that have clear winning conditions. These associations are misleading and may cause confusion and frustration, inhibiting critical reflection. Hence, it is critical to communicate explicitly the scope of the games and their theoretical underpinning, i.e. agonism, to players before they start the game. Information could be shared in the environment surrounding the game, using for example labels or marketing material, or at the beginning of the game, perhaps through a theatrical introduction/cut scene. In the specific case of a museum, information could be communicated through museum channels, for instance in person by the staff or through the museum website. As noted in the previous section (7.2.3), players tend to focus their attention on the screen. Thus an in game communication, before initiating play, may be the best solution. We could add an indication on the opening screen to indicate that these are AGs and do not necessarily have a winner. The game could even allow players the option to get additional information on AGs if they wish to do so.

7.3 RQ1: Are agonistic games capable of stimulating critical reflection on unsettling historical events?

Our findings show that players, when engaging with games that deal with sensitive topics, can find it difficult to transition beyond a reflexive, immediate emotional response and towards a more critical interpretation of the scenario depicted. Hence, the sense of unease that AGs aim to establish (**T1**) is the very thing that may inhibit their capacity to provoke critical reflection. We argue that this is not a limitation of the agonistic mode

of remembrance but rather that games are not yet widely accepted as a sufficiently nuanced tool for handling topics of intellectual and emotional weight. Our findings suggest that our AGs in isolation were limited in their ability to provoke critical reflection. While this may be the case, we observed that players, when discussing their gameplay experience during the post-game interviews, were able to think more objectively about and learn from their actions. The interviews acted as a debrief that provided players with the required space and guidance to make sense of what they had experienced through the lens of agonism.

Similarly, the MOOC comments suggest that some form of facilitation, for instance from educators, may be beneficial to help players derive meaning from AGs. This confirms what Crookall has advocated: "real (solid, lasting, meaningful and deeper) learning comes not from the game, but from the debriefing" [17]. Crookall clarifies that although learning can happen while playing "…deeper lessons are drawn out in a debriefing session". In the field of serious games, De Troyer [23] argues that debriefing is essential for effectiveness as it allows players to reflect on their gaming experience and to turn it into learning. Hence, we propose that a debrief is needed to make sense of agonistic experiences in games and to give players the time and space for critical reflection. This illustrates that playing an AG is merely an experiential phase in a wider framework for critical reflection; a tool that can support an agonistic mode of remembering but cannot achieve it independently. But while debriefing is considered "an essential part of any serious game" [32], this aspect is often overlooked by designers [17, 23].

A debrief, beyond the *de facto* debrief provided by the interviews conducted with the subset of visitors for our research purposes, was not originally planned for EB and UM43. Besides the fact that comprehensive debriefing is usually expensive and time-consuming, it is unclear how it could be conducted in practice. It is for instance infeasible to interview every player of an AG installed in a museum, either individually or in groups. De Troyer [23] also argues that a debriefing phase is usually performed by a human facilitator, but while this "approach may be quite effective, it is expensive, time consuming, and not possible when the serious game is used in a non-facilitating space (e.g. at home) or when no expert facilitator is available", e.g. in public spaces like museums (pp. 287). Recent research from Grund and colleagues [32] may offer a solution: an integrated approach to debriefing which could be deployed within the AGs. Following De Troyer's [23] arguments, a debriefing after game play could provide a solution to giving players an opportunity to reflect critically.

8 CONCLUSION

In this paper we have described how agonistic memory theory can be applied to games and answer the following research question: are agonistic games capable of stimulating critical reflection on unsettling historical events? Two corollaries stem from this: what factors may inhibit critical reflection in AGs and how can we overcome such inhibitors? To address these questions we report the design of two AGs developed as part of an exhibition at the Ruhr Museum in Essen, Germany, and analyse perspectives collected from exhibition visitors and participants in a MOOC in which the games were presented. Based on the data collected, we identified four key inhibitors to critical reflection in AGs: (1) the topic of a game; (2) the location in which a game is played; (3) the design of a game; and (4) assumptions about games.

First, we point out how games tackling unsettling topics such as bombing and genocide may cause players to perceive games as unduly violent, trivialising and insensitive. One way to address this perception is to implement a couch commentary that expresses the function and intentions of AGs. Secondly, we describe how the context in which the games are played may influence how they are perceived. This can be addressed by fully integrating AGs into the curation of their host environment (e.g. a museum exhibition), in turn encouraging stakeholder input. Thirdly, we outline how challenges related to game design and cognitive load can both obscure the core agonistic message and negatively impact a player's ability to reflect critically on the game's subject matter. Solutions may include reducing the number of characters in AGs, or by offering 'just in time' information on game mechanics and narrative content within the games themselves. Finally, we note how the expectations of the public about

warfare games, which typically offer realistic representations of conflict and conclusive winning conditions, can also impact how effectively AGs achieve their intended outcomes. To solve this the games could explicitly communicate their role beyond entertainment–and whether there is or is not a winning condition–through in game features such as cut scenes.

Our AGs were shown to evoke strong reactions, particularly from MOOC participants, which is *per se* evidence of their potential as tools for critical reflection. However, our findings suggest that the games alone may not offer sufficient opportunity or impetus to prompt players to reflect on unsettling topics in a critical way. Building from insights presented in this paper, we plan in future work to formalise a framework for the design of AGs. This work will include methods of integrating an explicit debrief into AGs to enhance their capacity to facilitate critical reflection.

To conclude, our paper pushes the boundaries of serious games by introducing the culturally novel concept of agonistic games, providing two implementations of this concept and an extensive analysis of their capacity for stimulating critical reflection. Although we have identified a number of challenges to overcome, our study offers a valuable account that can inform the development of future AGs.

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